IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Appellant:	CHEN et al.	Patent Application	
Application No.:	09/976,959	Group Art Unit:	3623
Filed:	10/11/2001	Examiner:	Tarae, Catherine Michelle

For: SYSTEM AND METHOD FOR FORECASTING UNCERTAIN EVENTS WITH ADJUSTMENTS FOR PARTICIPANT CHARACTERISTICS

APPEAL BRIEF

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I. Real Party in Interest

The assignee of the present application is Hewlett-Packard Development Company, L.P.

II. Related Appeals and Interferences

None. There are no related appeals or interferences known to the Appellants.

III. Status of Claims

Claims 1-17 and 19-20 are pending. Claim 18 is cancelled. This Appeal involves Claims 1-17 and 19-20.

IV. Status of Amendments

All proposed amendments have been entered. An amendment subsequent to the Office Action mailed April 4, 2008, Action has not been filed.

V. Summary of Claimed Subject Matter

Independent Claim 1 of the present application pertains to a forecasting process. Independent Claim 9 of the present application pertains to a computer system. Independent Claim 16 of the present application pertains to a new environment aggregation function analysis process. Claim 7 depends from independent Claim 1 and further defines the forecasting process of Claim 1. Claim 8 depends from independent Claim 1 and further defines the forecasting process of Claim 1. Claim 12 depends from independent Claim 9 and further defines the computer system of Claim 9. Claim 20 depends from independent Claim 16 and further defines the new environment aggregation function of Claim 16.

Claim 1: Claim 1 recites, "[a] forecasting process ..." this embodiment is described at least on page 8, line 19 - page 19, line 10; depicted in the flow chart of forecasting method 100 of Figure 1; and depicted in the flow chart of running an information market shown in Figure 2. With respect to Claim 1, "running an information market including an artificial market in which financial instruments are utilized, wherein said financial instruments are traded by participants in said information market," is described at least on page 9, lines 8-13 and in step 110 of Figure 1. "[E]xtracting participant characteristics through an analysis of results of trading of said financial instruments," is described at least on page 9, line 22 - page 10, line 13 and in step 120 of Figure 1. "[P]erforming a query process in addition to said running said information market, said query process including posing a predictive query to said participants and gathering results of said predictive query, said predictive query about a probability of a future outcome occurrence associated with an uncertain situation," is described at least on page 10 lines 15-20 and in step 130 of Figure 1. "[A]ggregating results of said query process with adjustments for said participant characteristics to produce an

aggregated probability projection associated with said uncertain situation," is described at least at page 11, line 16 - page 12, line 14 and in step 140 of Figure 1.

Claim 9: Claim 9 recites, "[a] computer system ..." this embodiment is described at least on page 8, line 19 - page 19, line 10; depicted in the flow chart of forecasting method 100 of Figure 1; and depicted in the flow chart of running an information market shown in Figure 2. With respect to Claim 9, "a memory for storing instructions on implementing a forecasting method" is described at least on page 15, lines 1-5. "[A] processor that executes said the instructions on implementing a forecasting method," is described at least on page 15, lines 4-12. "[R]unning an information market including an artificial market in which financial instruments are utilized, wherein said financial instruments are traded by participants in said information market," is described at least on page 9, lines 8-13 and in step 110 of Figure 1. "[E]xtracting participant characteristics through an analysis of results of trading of said financial instruments," is described at least on page 9, line 22 - page 10, line 13 and in step 120 of Figure 1. "[P]erforming a query process in addition to said running said information market, said query process including posing a predictive query to said participants and gathering results of said predictive query, said predictive query about a probability of a future outcome occurrence associated with an uncertain situation," is described at least on page10 lines 15-20 and in step 130 of Figure 1. "[A]ggregating results of said query process with adjustments for said participant characteristics to produce an aggregated probability projection associated with said uncertain situation," is described at least at page 11, line 16 - page 12, line 14 and in step 140 of Figure 1.

Claim 16: Claim 16 recites, "[a] new environment aggregation function analysis process ..." this embodiment is described at least on page 19, line 12 - page 27, line 9; page 5, lines 15-19; and depicted in the flow chart of a new environment aggregation function analysis 300 which is shown in Figure 3. With respect to Claim 16, "implementing an experimental information market including an artificial market in which financial instruments are utilized, wherein said financial instruments are traded by participants in said information market," is described at least on page 19, line 12 - page 20, line 16; in step 310 of Figure 3; at page 20, line 22 - page 21, line 2; and at page 23, lines 10-12. "[D]eveloping a new predictive aggregation formula with adjustments for personal characteristics of said participants, wherein said new predictive aggregation formula aggregates predictive information related to said experimental information market, said personal characteristics extracted through an analysis of results of trading of said financial instruments," is described at least on page 20, line 18 - page 21, line 2 and at step 320 of Figure 3. "[C]reating a prediction benchmark representative of a probability distribution conditioned upon all information acts of said experimental information market," is described at least on 21 lines 4-15; step 330 of Figure 3; and the equation for obtaining the omniscient theoretical probability benchmark which is shown on page 21. "[D]efining a measure to compare said new predictive aggregation formula with said benchmark," is described at least at page 21, line 17 - page 22, line 12, and in step 340 of Figure 3. "[C]omparing said new predictive aggregation formula to said prediction benchmark to determine if said new predictive aggregation formula is providing beneficial information," is described at least at page 22, line 14 - page 23, line 8; in step 350 of Figure 3; and at page 24, lines 2-15.

Claim 7: Claim 7 depends from independent Claim 1 and further defines the forecasting process of Claim 1. With respect to Claim 7, "wherein the results of the query process are aggregated by revising apriori probabilities with reports provided by participants and conditioning the reports by the characteristics of the participants" is described at least at page 9, lines 1-6 and 11, line 20 - page 12, line 2.

Claim 8: Claim 8 of the present application depends from independent Claim 1 and further defines the forecasting process of Claim 1. With respect to Claim 8, "wherein the results of the query process are aggregated by utilizing Bayes formula with each probability of said future outcome occurrence assigned by a participant modified by an exponential factor to condition the probability for adjustments associated with each participant's characteristics" is described at least at page 12, lines 4-14.

Claim 12: Claim 12 of the present application depends from independent Claim 9 and further defines the computer system of Claim 9. With respect to Claim 12, "wherein possible information market states are associated with an Arrow-Debreu state security" is described at least at page 16, line 14 - page 17, line 22.

Claim 20: Claim 20 of the present application depends from independent Claim 16 and further defines the new environment aggregation function of Claim 16. With respect to Claim 20, "wherein three information aggregation mechanisms are compared to the benchmark distribution using a Kullback-Leibler measure," is described at least at page 21, line 17 - page 22, line 17. "[W]herein said three information aggregation mechanisms include a no information prediction aggregation mechanism for aggregating predictions regarding said

experimental information market which are based upon no information about said experimental information market," is described at least at page 22, lines 2-4 and lines 10-15; the table shown on page 23; and by Figure 5. "[A] prediction aggregation mechanism for aggregating experimental information market predictions of a best performing participant in said experimental information market, and a prediction aggregation mechanism based upon a non-linear aggregation of experimental information market predictions of said participants with exponential factoring for characteristics of the individual participants and the experimental information market as a whole" is described at least at 22, lines 4-9 and lines 15-19, the table shown on page 23 (headings of no information, market prediction, and non-linear aggregation); and by Figure 5.

VI. Grounds of Rejection to Be Reviewed on Appeal

1. Claims 16-20 are rejected under 35 U.S.C. §112, second paragraph.

2. Claims 1-6, 9-11, and 13-15 are rejected under 35 U.S.C. §102(b) as being anticipated by fantasystockmarket.com (hereinafter "FSM").

3. Claims 16-19 are rejected under 35 U.S.C. §102(b) as being anticipated by anticipated by FSM.

4. Claim 7 is rejected under 35 U.S.C. §103(a) as being unpatentable over FSM in view U.S. Patent Number 6,606,615 to Jennings et al. (hereinafter "Jennings").

5. Claim 8 is rejected under 35 U.S.C. §103(a) as being unpatentable over FSM in view of Jennings.

6. Claim 12 is rejected under 35 U.S.C. §103(a) as being unpatentable over FSM in view of Hammond, "History as Widespread Externality in Some Arrow-Debreu Games" 1995 (hereinafter "Hammond").

VII. Argument

1. Whether Claims 16-20 are properly rejected under 35 U.S.C. §112, second paragraph.

Appellants respectfully submit that Claims 16-20 particularly point out and distinctly claim the subject matter which applicant regards as the invention, and thus overcome the rejection under 35 U.S.C. § 112, second paragraph.

With reference to Figure 3, the instant application recites:

> In step 330 a prediction benchmark is created. If the aggregation mechanism were perfect, the probability distribution of the states would be as if one person had seen all of the information available to the community. Therefore, the probability distribution conditioned on all the information acts as a benchmark for comparisons made to alternative aggregation mechanisms. In one embodiment of the present invention, the experimental information market includes twelve balls in an information urn, three for the true state and one for each of nine other states. (page 22, lines 4-11; emphasis added).

Thus, Appellants respectfully submits that the instant application particularly points out and distinctly claims "creating a prediction benchmark representative of a probability distribution conditioned upon all information acts of said experimental information market" as recited in Claim 16, and thus overcome the rejection under 35 U.S.C. § 112, second paragraph.

Moreover, the instant application recites that "[t]he analysis of different aggregation functions compares a 'new' aggregation function to a benchmark and ensures the aggregation function is providing beneficial information" (emphasis added; page 20, lines 17-19). In particular, the instant application recites:

> In one embodiment of the present invention, three information aggregation mechanisms are compared to the benchmark distribution given by finite equation above by using the Kullback-Leibler measure. In addition, reports are

made of the Kullback-Leibler measures, of the "no information" prediction (uniform distribution over all the possible states) and the predictions of the best individual. The "no information" prediction serves as the first baseline to determine if any information is contained in the predictions of the mechanisms. If a mechanism is really aggregating information, then it should be doing at least as well as the best individual. Predictions of the best individual serve as the second baseline, which helps to determine if information aggregation indeed occurred in the information market. (emphasis added; page 22, line 15, through page 23, line 8)

Thus, Appellants respectfully submits that the instant application particularly points out and distinctly claims "comparing said new predictive aggregation formula to said prediction bench mark to determine if said new predictive aggregation formula is providing beneficial information" as recited in Claim 16, and thus overcome the rejection under 35 U.S.C. § 112, second paragraph.

Furthermore, the instant application recites "[t]he exponent β_i is assigned to adjust for the characteristics of individual *i* and facilitates recovery of the true posterior probabilities from individual *i*'s report" (page 12, lines 8-10), while referencing the equation on line 7 of page 12.

Thus, Appellants respectfully submits that the instant application particularly points out and distinctly claims "wherein said adjustments include individual participant predictions with exponential factoring for characteristics of the individual participants and the experimental information market as a whole" as recited in Claim 19, and thus overcome the rejection under 35 U.S.C. § 112, second paragraph.

Claims 17 and 20 are rejected under 35 U.S.C. § 112, second paragraph, as being dependent on Claim 16. Therefore, since the rejection of Claim 16 under 35 U.S.C. § 112

second paragraph is overcome, Appellants respectfully submits that the rejection of Claims 17 and 20 under 35 U.S.C. § 112, second paragraph, are also overcome.

2. Whether Claims 1-6, 9-11, and 13-15 are anticipated under 35 U.S.C. §102(b) by FSM.

Appellants have reviewed FSM and respectfully submit that the embodiments recited in Claims 1-6, 9-11, and 13-15 are not anticipated by FSM in view of the following rationale.

Appellants respectfully direct attention to independent Claim 1, which recites that an embodiment is directed to (emphasis added):

> ...performing a query process in addition to said running said information market, said query process including posing a predictive query to said participants and gathering results of said predictive query, said predictive query about a probability of a future outcome occurrence associated with an uncertain situation; and
>
> aggregating results of said query process with adjustments for said participant characteristics to produce an aggregated probability projection associated with said uncertain situation.

Independent Claim 9 recites similar features. Claims 2-6 that depend from independent Claim 1, and Claims 10, 11, and 13-15 that depend from independent Claim 9 recite further features of Claim 1 and 9 respectively.

According to MPEP 2131, "to anticipate a claim, the reference must teach every element of the claim." Further, as cited in MPEP 2131, "[a] claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference." Verdegaal Bros. v. Union Oil Co. of California, 814 F.2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987). Additionally, according to MPEP 2131, "[t]he identical invention must be shown in as complete detail as is contained in the ... claim."

Richardson v. Suzuki Motor Co., 868 F.2d 1226, 1236, 9 USPQ2d 1913, 1920 (Fed. Cir. 1989). The elements must be arranged as required by the claim. In re Bond, 910 F.2d 831, 15 USPQ2d 1566 (Fed. Cir. 1990).

As explained by the anticipation requirements cited above, a claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference. Appellants respectfully submit that FSM fails to satisfy this *prima facie* requirement of anticipation because it does not teach, either expressly or inherently, "performing a query process in addition to said running said information market...," (emphasis added) as recited in independent Claims 1 and 9. On page 10, lines 13-14, the Office Action mailed April 4, 2008,contends that this is taught by "by placing a trade on a stock or mutual fund, (i.e., buy/sell), a participant is indicating their confidence or lack thereof in the future prices of the stock/mutual fund." However Appellants disagree.

Although, a participant may be expressing confidence in a stock/mutual fund by a buy/sell action, Appellants submit that such a buy/sell action is not an example of "performing a query process in addition to said running said information market." However, per Appellants' understanding, such buying and selling actions are requirement for running this sort of market, rather that representing "performing a query process in addition to running said information market." For example, the Office Action mailed April 4, 2008, has indicated that the claim feature of "running an information market...," as recited by Claim 1, is taught by FSM because "...[p]articipants use fantasy money to trade stocks and mutual funds in a fantasy stock market" (see page 10, lines 45 of the Office Action mailed April 4, 2008). However, Appellants submit that the same acts of buying and trading stocks in a fantasy market cannot constitute both

"running an information market..." and "performing a query process in addition to said running said information market... ."

Appellants note the Response to Arguments in the Office Action mailed April 4, 2008, which appears to assert that "Applicant has failed to explain why FSM does not teach performing a query process *in addition to* said running said information market; rather all Applicant argues is that DSM cannot teach *both* performing a query process *in addition to* said running said information market without any substantive support for such assertion (emphasis in original; Office Action mailed April 4, 2008; page 4, lines 6-10). Appellants respectfully submit that the argument presented above provides substantive support for the assertion that the same acts of buying and trading stocks in a fantasy market cannot constitute both "running an information market..." and "performing a query process in addition to said running said information market... ." For instance, the Office Action mailed April 4, 2008, has indicated that the claim feature of "running an information market...," as recited by Claim 1, is taught by FSM because "...[p]articipants use fantasy money to trade stocks and mutual funds in a fantasy stock market" (Office Action mailed April 4, 2008, see page 10, lines 4-5). Appellants respectfully submit that the same acts of buying and trading stocks as disclosed in FSM cannot constitute both "running an information market..." and "performing a query process in addition to said running said information market..." as claimed, because these acts are mutually exclusive. Therefore, Appellants respectfully assert that FSM fails to meet the *prima facie* requirement for anticipation.

Furthermore, Appellants respectfully submit that FSM fails to satisfy the above recited *prima facie* requirements of anticipation because it does not teach, either expressly or inherently,

"aggregating results of said query process with adjustments for said participant characteristics to produce an aggregated probability projection associated with said uncertain situation ...," (emphasis added) as recited in independent Claims 1 and 9. On page 10, lines 17-19, the Office Action mailed April 4, 2008, contends that this is taught by FSM because "...[p]articipants are ranked based on their trading performance. Thus the results of how they trade impact their overall standing/ranking compared with other participants." Appellants don't dispute that FSM ranks participants. However, Appellants contend that that such a ranking is not the same as an aggregated probability projection associated with said uncertain situation." At most, a percentage/ranking in FSM represents a participant's placement among others (i.e., their ranking/standing) based upon actual results of actual trading in a fantasy stock market. Per Appellants' understanding, a ranking in FSM which is based on an actual result is very different than a probability projection.

Moreover, per Appellants' understanding, FSM also fails to meet the *prima facie* requirement for anticipation because it contains no teaching regarding "aggregating results of said query process with adjustments for said participant characteristics to produce an aggregated probability projection associated with said uncertain situation." At best Appellants understand FSM to list rank ordered or percentage ranking results of a participant's trading actions in comparison to other participants trading actions, without performing any sort of aggregation with participant characteristics or any other sort of data.

Appellants note the Response to Arguments in the Office Action mailed April 4, 2008, which appears to assert that the chart on page 3 of FSM represents "the aggregate probability projection associated with stocks/mutual funds" (Office Action mailed April 4, 2008; page 5,

lines 3-4). Appellants respectfully continue to submit that FSM is silent as producing an "aggregated probability projection" as claimed, as the definition of Most Active/Less Active illustrates past performance, and does not anticipate an "aggregated probability projection" as claimed.

"Applicant has failed to explain why FSM does not teach performing a query process *in addition to* said running said information market; rather all Applicant argues is that FSM cannot teach *both* performing a query process *in addition to* said running said information market without any substantive support for such assertion (emphasis in original; Office Action mailed April 4, 2008; page 4, lines 6-10). Appellants respectfully submit that the argument presented above provides substantive support for the assertion that the same acts of buying and trading stocks in a fantasy market cannot constitute both "running an information market..." and "performing a query process in addition to said running said information market... ." For instance, the Office Action mailed April 4, 2008, has indicated that the claim feature of "running an information market...," as recited by Claim 1, is taught by FSM because "...[p]articipants use fantasy money to trade stocks and mutual funds in a fantasy stock market" (Office Action mailed April 4, 2008, see page 10, lines 4-5). Appellants respectfully submit that the same acts of buying and trading stocks as disclosed in fantasystockmarket.com cannot constitute both "running an information market..." and "performing a query process in addition to said running said information market..." as claimed, because these acts are mutually exclusive. Therefore, Appellants respectfully assert that FSM fails to meet the *prima facie* requirement for anticipation.

Therefore, Appellants respectfully assert that nowhere does FSM teach, disclose or suggest the claimed embodiments as recited in independent Claims 1 and 9, that these claims overcome the rejection under 35 U.S.C. §102(b), that the rejection under 35 U.S.C. §102(b) fails to make a *prima facie* case, and that these claims are thus in a condition for allowance. Additionally, Appellants respectfully submit that Claims 2-6, 10, 11, and 13-15 also overcome the rejection under 35 U.S.C. § 102(b), and are in a condition for allowance as being dependent on allowable base claims.

3. Whether Claims 16-19 are anticipated under 35 U.S.C. §102(b) by FSM.

Appellants have reviewed FSM and respectfully submit that the embodiments of the as recited in Claims 16, 17, and 19 are not anticipated by FSM in view of the following rationale.

Appellants respectfully direct attention to independent Claim 16, which recites:

> implementing an experimental information market including an artificial market in which financial instruments are utilized, wherein said financial instruments are traded by participants in said information market;
> developing a new predictive aggregation formula with adjustments for personal characteristics of said participants, wherein said new predictive aggregation formula aggregates predictive information related to said experimental information market, said personal characteristics extracted through an analysis of results of trading of said financial instruments;
> creating a prediction benchmark representative of a probability distribution conditioned upon all information acts of said experimental information market;
> defining a measure to compare said new predictive aggregation formula with said benchmark and
> comparing said new predictive aggregation formula to said prediction bench mark to determine if said new predictive aggregation formula is providing beneficial information.

Claims 17 and 19 depend from independent Claim 16, and recite further features of Claim 16. Claim 18 has previously been cancelled, thus rendering rejection of this claim moot.

As explained by the anticipation requirements cited above, "a claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference." Appellants respectfully submit that FSM fails to satisfy this requirement of anticipation, because it does not teach, either expressly or inherently, "developing a new predictive aggregation formula with adjustments for personal characteristics of said participants..." as recited in Claim 16. The Office Action mailed April 4, 2008, (page 10, lines 17-19) contends that FSM teaches this (on pages 3, 4, and 9) by tracking participant's trading performance against other participants. However, per Appellants' understanding, such tracking does not involve, teach, or suggest, "developing a new predictive aggregation formula with adjustments for personal characteristics of said participants...," as recited in Claims 16. Per Appellants' understanding, at most aspects of participant portfolio account balances, gains, and losses are tracked and ranked versus those of other participants, with no adjustments being made based on participants personal characteristics.

For example, page 4 of FSM indicates "[y]our percentage (%) gain or loss shows the percentage gain or loss of the total value of your Fantasy Balance over or below your original $100,000." Page 4 of FSM also indicates "[y]our fantasy ranking shows your percentage ranking against all the Fantasy Stock Market players. Example: If your fantasy ranking is top 35% this means that 35% of the players have a Fantasy Balance equal to or higher than your Fantasy Balance..." Per Appellants' understanding, FSM teaches no development of a predictive aggregation formula. Instead, per Appellants' understanding only the compiling of actual results is taught by FSM. As previously indicated, Appellants understand a prediction to be very different from an actual result. Moreover, per Appellants' understanding, FSM teaches no "predictive aggregation formula with adjustments for personal characteristics or said

participants." Per Appellants' understanding, only participant results appear to be compiled (for example on page 9 of FSM) with no adjustments being made for personal characteristics.

Therefore, for at least the rational described above, Appellants respectfully assert that nowhere does FSM teach, disclose or suggest the claimed embodiments as recited in independent Claim 16, that this claim overcomes the rejection under 35 U.S.C. §102(b), and that this claim is thus in a condition for allowance. Additionally, Appellants respectfully submit that Claims 17 and 19 also overcome the rejection under 35 U.S.C. §102(b), and are in a condition for allowance as being dependent on an allowable base claim.

4. Whether Claim 7 is rendered unpatentable under 35 U.S.C. §103(a) by FSM in view of Jennings.

Appellants respectfully submit that the embodiments as recited in Claim 7 are patentable over the combination of FSM and Jennings in view of the following rationale.

Appellants respectfully note that "[a] prior art reference must be considered in its entirety, i.e., as a whole, including portions that would lead away from the claimed invention" (emphasis in original; MPEP 2141.02(VI); *W.L. Gore & Associates, Inc. v. Garlock, Inc.*, 721 F.2d 1540, 220 USPQ 303 (Fed. Cir. 1983), *cert. denied*, 469 U.S. 851 (1984)). Moreover, Appellants note that "[i]f the proposed modification or combination of the prior art would change the principle of operation of the prior art invention being modified, then the teachings of the references are not sufficient to render the claims *prima facie* obvious" (emphasis added) (MPEP 2143.01; *In re Ratti*, 270 F.2d 810, 123 USPQ 349 (CCPA 1959)).

Appellants submit there is no suggestion or motivation to combine FSM and Jennings for the rejection of Claims 7 and 8 under 35 U.S.C. §103(a), as the proposed modification or combination of the prior art would change the principle of operation of the invention being modified. For example, per Appellants' understanding, FSM is directed to a fantasy stock market game which ranks players by the absolute gain or loss of their portfolio (either in dollars or as a percentage) with reference to a common starting value of $100,000 (see, e.g., pages 4, 9, and 10 of FSM).

With respect to Claim 7, the Office Action mailed April 4, 2008, proposes combining Jennings with FSM "...to generate a more accurate estimation of the statistical distributions associated with market estimations of future outcomes, thereby enhancing the accuracy of the measure of market sentiment relating to values of the stocks and mutual funds, which enables a better ranking of participants' performance," (see pages 14 of the Office Action mailed April 4, 2008). Appellants respectfully submit that such a modification to the rankings structure of FSM would change the principle of operation of FSM, which ranks participants based on absolute gains or losses of a portfolio rather than on statistical distributions. As such, the combined teachings of FSM and Jennings are not sufficient to render Claim 7 *prima facie* obvious, as the proposed modification to FSM changes the principle of operation of FSM.

Assuming for argument that such an improvement could result from combining FSM and Jennings in the manner suggested (without changing the principle of operation of FSM), the Office Action mailed April 4, 2008 suggests the motivation for implementing the improvement is that "as doing so enhances the integrity of the game," see page 7, lines 13-14

of the Office Action mailed April 4, 2008. However, per Appellants' understanding, the integrity of the game is of little or no consequence, as FSM indicates "[t]here is no right way or wrong way to play Fantasy Stock Market. Use this site as a fun and educational tool to help your knowledge of investing. Prizes for Fantasy Stock Market are awarded based upon participation, not performance, so have fun," (emphasis added) see FSM, bottom of page 4. Because the trades in FSM are based upon actual stock prices that are delayed by 15-20 minutes (see FSM page 4) anyone with access to more current prices (rather than delayed prices) could easily be the "best" player in the game. For this reason, the game will always lack "integrity" and thus, Appellants submit that "enhancing the integrity of the game" is not a motivation for combining FSM and Jennings in the manner suggested.

5. Whether Claim 8 is rendered unpatentable under 35 U.S.C. §103(a) by FSM in view of Jennings.

Appellants respectfully submit that the embodiments as recited in Claim 8 are patentable over the combination of FSM and Jennings in view of the following rationale.

Appellants respectfully note that "[a] prior art reference must be considered in its entirety, i.e., as a whole, including portions that would lead away from the claimed invention" (emphasis in original; MPEP 2141.02(VI); *W.L. Gore & Associates, Inc. v. Garlock, Inc.*, 721 F.2d 1540, 220 USPQ 303 (Fed. Cir. 1983), *cert. denied*, 469 U.S. 851 (1984)). Moreover, Appellants note that "[i]f the proposed modification or combination of the prior art would change the principle of operation of the prior art invention being modified, then the teachings of the references are not sufficient to render the claims *prima facie* obvious" (emphasis added) (MPEP 2143.01; *In re Ratti*, 270 F.2d 810, 123 USPQ 349 (CCPA 1959)).

With respect to Claim 8, the Office Action mailed April 4, 2008, proposes combining Jennings with FSM "... to modify FSM to aggregate the results of the query process by utilizing Bayes formula...as doing so enables FSM to generate a more accurate estimation of the statistical distributions associated with market expectations of future outcomes, thereby enhancing the accuracy of the measure of market sentiment relating to values of stocks and mutual funds, which enables a better ranking of participants' performances," (see page 14 of the Office Action mailed April 4, 2008). Appellants respectfully submit that such a modification to the rankings of FSM would change the principle of operation of FSM, which ranks participants based on absolute gains or losses of a portfolio rather than on statistical distributions. As such, the combined teachings of FSM and Jennings are not sufficient to render Claim 8 *prima facie* obvious, as the proposed modification to FSM changes the principle of operation of FSM.

Assuming for argument that such an improvement could result from combining FSM and Jennings in the manner suggested (without changing the principle of operation of FSM), the Office Action mailed April 4, 2008 suggests the motivation for implementing the improvement is that "as doing so enhances the integrity of the game," see page 7, lines 13-14 of the Office Action mailed April 4, 2008. However, per Appellants' understanding, the integrity of the game is of little or no consequence, as FSM indicates "[t]here is no right way or wrong way to play Fantasy Stock Market. Use this site as a fun and educational tool to help your knowledge of investing. Prizes for Fantasy Stock Market are awarded based upon participation, not performance, so have fun," (emphasis added) see FSM, bottom of page 4. Moreover, because the trades in FSM are based upon actual stock prices that are delayed by

15-20 minutes (see FSM page 4) anyone with access to more current prices (rather than delayed prices) could easily be the "best" player in the game. For this reason, the game will always lack "integrity" and thus, Appellants submit that "enhancing the integrity of the game" is not a motivation for combining FSM and Jennings in the manner suggested.

6. Whether Claim 12 is rendered unpatentable under 35 U.S.C. §103(a) by FSM in view of Hammond.

Appellants respectfully submit that the embodiment as recited in Claim 12 is patentable over the combination of FSM and Hammond in view of the following rationale.

"As reiterated by the Supreme Court in *KSR*, the framework for the objective analysis for determining obviousness under 35 U.S.C. 103 is stated in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966). Obviousness is a question of law based on underlying factual inquiries" including "[a]scertaining the differences between the claimed invention and the prior art" (MPEP 2141). "In determining the differences between the prior art and the claims, the question under 35 U.S.C. 103 is not whether the differences themselves would have been obvious, but whether the claimed invention as a whole would have been obvious" (emphasis in original; MPEP 2141.02(I)). Appellants note that "[t]he prior art reference (or references when combined) need not teach or suggest all the claim limitations, however, Office personnel must explain why the difference(s) between the prior art and the claimed invention would have been obvious to one of ordinary skill in the art" (emphasis added; MPEP 2141(III)).

Appellants respectfully direct attention to independent Claim 9 (from which Claim 12 depends). Claim 9 recites that an embodiment is directed to (emphasis added): "performing a query process in addition to said running said information market, said query process including posing a predictive query to said participants and gathering results of said predictive query, said predictive query about a probability of a future outcome occurrence associated with an uncertain situation." Appellants submit, as described previously in conjunction with Claims 1 and 9, that FSM does not teach or suggest this feature. Rather, per Appellants' understanding, FSM only teaches running a fantasy stock market "to purchase stocks and mutual funds," see e.g., FSM, page 4, lines 1-17. Per Appellants' understanding, FSM is silent regarding "performing a query process in addition to said running said information market," as is recited in Claim 9.

Appellants submit that the addition of Hammond fails to cure this deficiency. For example, per Appellants' understanding, nothing in Hammond teaches, suggests, or motivates, "performing a query process in addition to said running said information market," as is recited in Claim 9. Further, Appellants submit that the combination of FSM and Hammond does not teach, describe, or suggest such a feature. Moreover, no explanation is provided in the Office Action mailed April 4, 2008, as to why these differences (and overcoming them) between the claimed feature and the combination of FSM and Hammond would have been obvious to one of ordinary skill in the art. Thus for these reasons, Appellants submit the combination of FSM and Hammond does not render obvious the features of Claims 9. As Claim 12 depends from Claim 9, Appellants submit that Claim 12 is allowable over the combination of FSM and Hammond by virtue of dependence upon an allowable base claim.

Appellants respectfully note that "[a] prior art reference must be considered in its entirety, i.e., as a whole, including portions that would lead away from the claimed invention" (emphasis in original; MPEP 2141.02(VI); *W.L. Gore & Associates, Inc. v. Garlock, Inc.*, 721 F.2d 1540, 220 USPQ 303 (Fed. Cir. 1983), *cert. denied*, 469 U.S. 851 (1984)). Moreover, Appellants note that "[i]f the proposed modification or combination of the prior art would change the principle of operation of the prior art invention being modified, then the teachings of the references are not sufficient to render the claims *prima facie* obvious" (emphasis added) (MPEP 2143.01; *In re Ratti*, 270 F.2d 810, 123 USPQ 349 (CCPA 1959)).

The Office Action mailed April 4, 2008, (page 15) contends that "...it would have been obvious to a person of ordinary skill in the art to modify FSM so that its information market states are associated with an Arrow-Debreu state security as Arrow-Debreu securities allow participants to trade in a single state, thereby simplifying the game for participants." However, Appellants submit that such a modification to FSM would alter the principle of operation of the trading in FSM, which consists of buying and selling stocks and mutual funds based upon "prices of real stocks from the NASDAQ, American Stock Exchange, New York Stock Exchange, etc., delayed 15-20 minutes," (see FSM page 4) and tracking "...a gain or loss of the total value of your Fantasy Balance over or below your original $100,000," (see page 4 of FSM, and the example shown on page 9 of FSM). Thus, even if the suggested modification of FSM in view of Hammond resulted in a simplified game, such a modification would significantly change the operation of the game as outlined in FSM from trading stocks and mutual funds at delayed list prices and tracking a gain or loss, to a game which a participant did something such as place a guess on one of two market states and the accuracy

of their guesses was tracked. Appellants submit such modification substantially changes the principle of operation of the fantasy stock market game described by FSM, and thus the combination of FSM and Hammond in such fashion is insufficient to render Claim 12 *prima facie* obvious.

Conclusion

Appellants believe that pending Claims 1-17 and 19-20 are patentable over the cited art. As such, Appellants respectfully request that the rejections of Claims 1-17 and 19-20 be reversed.

The Appellants wish to encourage the Examiner or a member of the Board of Patent Appeals to telephone the Appellants' undersigned representative if it is felt that a telephone conference could expedite prosecution.

Respectfully submitted,
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Dated: 09/17/2008

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VIII. Appendix - Clean Copy of Claims on Appeal

1. A forecasting process comprising:

running an information market including an artificial market in which financial instruments are utilized, wherein said financial instruments are traded by participants in said information market;

extracting participant characteristics through an analysis of results of trading of said financial instruments;

performing a query process in addition to said running said information market, said query process including posing a predictive query to said participants and gathering results of said predictive query, said predictive query about a probability of a future outcome occurrence associated with an uncertain situation; and

aggregating results of said query process with adjustments for said participant characteristics to produce an aggregated probability projection associated with said uncertain situation.

2. A forecasting process of Claim 1 wherein said information market is designed to elicit characteristics of participants.

3. A forecasting process of Claim 2 wherein said characteristics include participant risk inclination.

4. A forecasting process of Claim 2 further comprising utilizing different scenarios wherein said participants are presented with different information and wherein said

characteristics include participants ability to identify and respond to quality of said information provided in said information market.

5. A forecasting process of Claim 2 further comprising correlating observed behavior to accepted characteristic tendencies.

6. A forecasting process of Claim 2 wherein said information market includes an artificial market financial instrument corresponding to a real world state.

7. A forecasting process of Claim 1 wherein the results of the query process are aggregated by revising apriori probabilities with reports provided by participants and conditioning the reports by the characteristics of the participants.

8. A forecasting process of Claim 1 wherein the results of the query process are aggregated by utilizing Bayes formula with each probability of said future outcome occurrence assigned by a participant modified by an exponential factor to condition the probability for adjustments associated with each participant's characteristics.

9. A computer system comprising:

a memory for storing instructions on implementing a forecasting method; and

a processor that executes said the instructions on implementing a forecasting method, including:

running an information market including an artificial market in which financial instruments are utilized, wherein said financial instruments are traded by participants in said information market;

extracting participant characteristics through an analysis of results of trading of said financial instruments;

performing a query process in addition to said running said information market, said query process including posing a predictive query to said participants and gathering results of said predictive query, said predictive query about a probability of a future outcome occurrence associated with an uncertain situation; and

aggregating results of said query process with adjustments for said participant characteristics to produce an aggregated probability projection associated with said uncertain situation.

10. A computer system of claim 9 wherein said processor and memory are communicatively coupled to the Internet and participants interact with said forecasting computer system via the Internet.

11. A computer system of claim 9 wherein running said information market comprises:

organizing participants;

creating a financial instrument; and

establishing a mechanism for permitting participants to interact in said information market.

12. The computer system of Claim 9 wherein possible information market states are associated with an Arrow-Debreu state security.

13. The computer system of Claim 9 wherein said information market artificial instruments correspond to the occurrence of a real world state.

14. The computer system of Claim 11 wherein said information market comprises an artificial call market in which securities are traded.

15. The computer system of Claim 14 wherein running said information market further comprises:

gathering the bids and asks at the end of a call round;

determining a market price and volume;

completing transactions; and

beginning another call round.

16. A new environment aggregation function analysis process comprising:

implementing an experimental information market including an artificial market in which financial instruments are utilized, wherein said financial instruments are traded by participants in said information market;

developing a new predictive aggregation formula with adjustments for personal characteristics of said participants, wherein said new predictive aggregation formula aggregates predictive information related to said experimental information market, said

personal characteristics extracted through an analysis of results of trading of said financial instruments;

creating a prediction benchmark representative of a probability distribution conditioned upon all information acts of said experimental information market;

defining a measure to compare said new predictive aggregation formula with said benchmark and

comparing said new predictive aggregation formula to said prediction bench mark to determine if said new predictive aggregation formula is providing beneficial information.

17. A new environment aggregation function analysis process of claim 16 wherein said new predictive aggregation formula is utilized in a forecasting process.

19. A new environment aggregation function analysis process of claim 16 wherein said adjustments include individual participant predictions with exponential factoring for characteristics of the individual participants and the experimental information market as a whole.

20. A new environment aggregation function analysis process of claim 17 wherein three information aggregation mechanisms are compared to the benchmark distribution using a Kullback-Leibler measure, wherein said three information aggregation mechanisms include a no information prediction aggregation mechanism for aggregating predictions regarding said experimental information market which are based upon no information about said experimental information market, a prediction aggregation mechanism for aggregating experimental information market predictions of a best performing participant in said

experimental information market, and a prediction aggregation mechanism based upon a non-linear aggregation of experimental information market predictions of said participants with exponential factoring for characteristics of the individual participants and the experimental information market as a whole.

IX. Evidence Appendix

None. No evidence is herein appended.

X. Related Proceedings Appendix

None. No related proceedings are herein appended.